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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,509	09/28/2001	Kazuyoshi Kawasaki	Q64406	5657

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EXAMINER

WILSON, DONALD R

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/20/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,509

Applicant(s)

KAWASAKI ET AL.

Examiner

D. R. Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-20 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,8,9,13-17,19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,6,7,10-12 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION**Conclusion to Restriction Requirement**

1. Applicant's election with traverse of the inventions of Group I, now Claims 2-3, 6-7, 10-12 and 18 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that "[t]he end group of the copolymer of Coughlin et al is not free carboxyl group, but is a carboxyl salt group or carboxyamide group", and "--- Applicants' elastomer having free carboxyl group as claimed in independent claim 2" is not disclosed. This is not deemed to be persuasive because applicant's Claim 2 only specifies a carboxyl group, not a free carboxyl group. In other contexts a carboxyl group can be taken to mean a -COOH group as opposed to a carboxylate group. However, by applicants' reference to free (presumably versus not free) and associated and unassociated, and use of the term "carboxyl salt", carboxyl is interpreted to include both carboxylic acid groups and carboxylate salt groups. The Examiner notes applicant's reference to the specification stating that in the Dupont patents the carboxylic acid groups would be scarcely present (specification page 14). However, even if Claim 2 is amended to make clear that the end group is to be a carboxylic acid group, even a fraction of a percent of carboxylic acid groups would be sufficient to meet the limitations of the comprising language of the claim. In the prior art rejections, the Examiner has assumed that the claims will be amended to recite a carboxylic acid group. From the prior art rejections discussed below, it is still not seen that the special technical feature linking the inventions, provides a contribution over the prior art.
2. The requirement is still deemed proper and is therefore made FINAL. Claims 4-5, 8-9, 13-17 and 19-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention.

Election of Species Requirement

3. Applicant's election without traverse of the specie of TFE/PMVE having free carboxyl groups at an end of a trunk chain and/or branched chains as the fluorine containing elastomer, in the same Paper No. 8 is also acknowledged.

Claim Rejections - 35 USC § 112, Second Paragraph

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 2-3, 6-7, 10-12 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

6. The languages of Claims 2 and 3 are indefinite because a cross-linkable group would require the presence of more than one such group per chain or cross-linking would not take place, i.e., there would need to be "---- carboxyl groups present at ends of a trunk---" as opposed to the recited "---- carboxyl group present at an end of a trunk---", or there would need to be other crosslinkable groups also present. Further, carboxyl group (singular) would require a preceding indefinite article "a".

7. Claim 6 is indefinite because the languages that "--- X¹ and X² are the same or different and each is a carboxyl group, ---", or that "--- Y¹, Y² and Y³ are the same or different and each is a divalent organic group having carboxyl group ----" are inconsistent with the later language that "--- any one of X¹, X², Y¹, Y² and Y³ is a carboxyl group or ---", which limits the presence to one such group. Further, Y¹, Y² and Y³ are divalent groups and therefore cannot be a carboxyl group as recited in the next to last line of the claim. Additionally, the language "may be" in the next to last line, makes it indefinite as to whether or not Y¹, Y² and Y³ are contained at random in the segments. This may be overcome by using the language "is optionally", which the office finds to be acceptable. There should also be an "and" prior to the last clause in the claim. As above the indefinite article "a" is missing throughout the claim.

8. Claim 10 is indefinite for the same reasons to Claim 6, except that Claim 10 doesn't specify Y¹, Y² and Y³ in the any one is a carboxyl group phrase.

9. Claims 12 and 18 are indefinite because they each consist of more than one sentence.

"Each claim begins with a capital letter and ends with a period. Periods may not be used elsewhere in the claims except for abbreviations. See *Fressola v. Manbeck*, 36 USPQ2d 1211 (D.D.C. 1995)." See M.P.E.P. § 608.01(m).

10. Claims 12 and 18 are further indefinite because it is unclear what is meant by associated versus non-associated absorption peaks. Further, as Dp and Fp are not variables and have specific values, i.e.,

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2.03 and 71.6, the description of how these numbers are arrived at is best left in the specification as opposed to repeating this in the claims.

Claim Rejections - 35 USC § 102(b)/§ 103(a)

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. ***Claims 2-3, 6-7, 10-12 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Logothesis, optionally in view of Imbalzano (for 103(a)).***

15. Logothesis discloses perfluoroelastomer compositions which comprise a plurality of carboxyl end-groups, and which have an integrated absorbance ratio of greater than 0.1 (col. 1, line 55 to col. 2, line

12). The integrated absorbance ratio corresponds to the factor "Sco/Scf" of applicant's equation (1).

Although not calculated over exactly the same wavelengths, and not corrected by the factors D/Dp and F/Fp, it is reasonable to expect that the limitations of Claims 12 and 18 are met, and the burden is on applicant to show otherwise.

It has been held that where applicant claims a composition in terms of function, property or characteristic where said function is not explicitly shown by the reference and where the examiner

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has explained why the function, property or characteristic is considered inherent in the prior art, it is appropriate for the examiner to make a rejection under both the applicable section of 35 USC 102 and 35 USC 103 such that the burden is placed upon the applicant to provide clear evidence that the respective compositions do in fact differ. *In re Best*, 195 USPQ 430, 433 (CCPA 1977); *In re Fitzgerald et al.*, 205 USPQ 594, 596 (CCPA 1980).

16. The preferred copolymers are composed of TFE and at least one perfluoro(alkyl vinyl) ether (PAVE) as principal monomer units (col. 4, lines 27-31). Perfluoro(methyl vinyl) ether (PMVE) is one of only two PAVE monomers specifically taught (col. 4, lines 1-4), and a TFE/PMVE copolymer is exemplified. It is taught that the carboxyl groups may be present as end-groups introduced during polymerization and/or by copolymerization of carboxyl group containing monomers (col. 5, lines 1-25). It is acknowledged that Logothetis only exemplifies copolymer preparation under buffered conditions wherein the carboxyl groups would end-up as carboxylate groups. However, in as much as Logothetis specifically teaches carboxyl groups as opposed to carboxylate group, one of ordinary skill in the art would readily envisage making the copolymer under conditions which do not result in the carboxyl groups being neutralized to a salt form. Optionally, as for instance is disclosed by Imbalzano, the selection of initiator and chain transfer agent dictate the end groups on the polymer chain, that persulfate initiators are known to give -COOH (carboxyl) end groups in aqueous polymerization, and that if a buffer is used carboxylate salts, e.g., ammonium salts, result (col. 1, lines 41-49). Thus, one of ordinary skill in the art would know that the carboxyl group (-COOH) copolymers taught by Logothetis can be made in aqueous persulfate polymerization in the absence of buffers.

17. **Claims 2-3, 6-7, 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Buckmaster, Carlson or Gibbard.**

18. Buckmaster disclose a process for foaming perfluoropolymers which involves converting carboxyl (-COOH) groups to metal salts thereof, which can then be decarboxylated (col. 1, lines 53-59). Thus, polymers such as are claimed and having -COOH carboxyl groups prior to neutralization are taught. Fluoropolymers which can typically be used include TFE/PAVE copolymers, and the PAVE monomers containing 1-3 carbon atoms in the alkyl group are taught to be preferred (col. 2, lines 5-27). Thus a TFE/PMVE would readily be envisaged by one of ordinary skill in the art. Processes of making the polymers and converting COF groups to carboxyl groups by hydrolysis are taught (col. 2, lines 39-55).

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The concentration of carboxyl ends is that necessary to form a void fraction of at least 20% in the foamed polymer, which is preferably at least 50/10⁶ carbon atoms (col. 2, lines 28-38). Fluoropolymers having a concentration of carboxyl groups as taught would be expected to meet the limitations of instant claims 12 and 18, and the burden is on applicant to show otherwise. A comparative extrusion of an TFE/HFP polymer having a similar concentration of -COOH groups but containing no metal ion is shown in Example 1.

19. Carlson discloses the stabilization of TFE copolymers by converting carboxylic acid and acid fluoride end groups to methyl esters. Example II discloses the stabilization of a TFE/PPVE copolymer which is capped by treatment with methanol. Example III disclose the preparation of an uncapped TFE/PPVE copolymer by hydrolysis in water for 4 hours at 100°C (col. 4, lines 18-22).

20. Gibbard discloses methods of producing melt fabricable fluoropolymers which involves first converting carboxylic acid groups on the fluoropolymers to carboxylate anions, and then thermally decarboxylating the fluoropolymer (col. 2, lines 49-68). The neutralization of carboxyl groups is accomplished with strong base by raising the pH of the aqueous dispersion to 4 to 10 and particularly 6 to 8 (col. 4, lines 29-34). The initial pH of the fluoropolymer dispersions are typically about 2-2.5 (col. 4, lines 35-40) and an initial pH of 2.2 is exemplified for a TFE/HFP copolymer (Example 1). Such a pH is indicative of the carboxyl group (-COOH) being initially present as opposed to a carboxylate salt. Typical fluoropolymers contain 30-100 wt.% of a fluoroolefin of which TFE is given as an example, and 0-70 wt.% of non-fluoroolefins among which PMVE is specifically taught (col. 6, line 66, to col. 7, line 25). Such polymers, prior to neutralization would appear to meet the limitations of claims 12 and 18, and the burden is on applicant to show otherwise.

21. **Claims 12 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Buckmaster, Carlson or Gibbard.**

22. The teachings of Buckmaster, Carlson and Gibbard are discussed above. Although each of the references are deficient in not teaching the integrated absorbance ratio (corresponding to applicants equation one) of ≥ 0.1 , this appears to be an inherent property to the compositions relied upon in the

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above rejections, as the polymers have carboxyl group and carbon fluoride bond concentrations similar to those of the instant invention.

Art of Interest/Technological Background

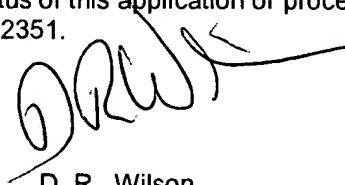
23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Marchionni discloses perfluoropolyether with acid fluoride end groups which are hydrolyzed to carboxyl groups and may be used in a future rejection of non-elected species of the instantly claimed invention. Blong, not available as prior art, discloses fluoropolymer which have been acidified to leave practically only carboxyl groups and is cited as being of interest. Coughlin, cited in the restriction requirement is believed to be cumulative to Logothetis.

Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. R. Wilson whose telephone number is 703-308-2398.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 703-308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications. The unofficial direct fax phone number to the Examiner's desk is 703-872-9029.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-2351.



D. R. Wilson
Primary Examiner
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